

Appl. No. 09/729,806  
Amdt. dated May 3, 2004  
Reply to Office Action of March 1, 2004

#### REMARKS

In the Office Action dated March 1, 2004, claims 1-4, 17-30, and 32-34 were rejected under 35 U.S.C. § 102 over U.S. Patent No. 5,933,838 (Lomet); and claim 31 was rejected under § 103 over Lomet alone.

Applicant acknowledges the indication that claims 15 and 16 would be allowable if rewritten in independent form.

Claim 15 has been amended from dependent form to independent form, with the scope of the claim remaining unchanged. Thus, claims 15 and 16 are in condition for allowance.

As amended, claim 1 is allowable over Lomet. Claim 1 now recites a database system including one or more storage devices containing a table having plural rows, the plural rows including a first row containing a before image representing data *in a portion of the table* before a data modification operation and a second row containing an after image representing data *in the portion of the table* processed by *the* data modification operation. In the present Office Action, the Examiner agreed that Figure 11 of Lomet shows objects 128 and 130 that are completely different types of data objects. 3/1/2004 Office Action at 7. To clarify that the before image and after image represent data in the same portion of the table, claim 1 now recites that the first row contains a before image representing data *in a portion* of the table before a data modification operation, and a second row containing an after image representing data *in the portion* of the table processes by *the* data modification operation.

In Lomet, the data structure 128 is part of an entry 124 for an application object A, and the data structure 130 is part of an entry 126 for a data object O. Lomet, 18:46-50. The application object contains an application state (i.e., address space). Lomet, 5:41-46, 6:33-40, 18:41-45. On the other hand, data objects contain data. Lomet, 18:33-45. Thus, the information contained in the data structures 128 and 130 are completely different types of information, and therefore, the data structures 128 and 130 cannot contain before and after images as recited in claim 1.

Withdrawal of the final rejection of claim 1 is respectfully requested.

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Claims dependent from claim 1 are allowable for at least the same reasons as for claim 1. Moreover, with respect to claim 4, Lomet does not teach that each of the first and second rows are associated with a row identifier, where the row identifiers of the first and second rows have a *first value* (that is, the same value). In Lomet, because the application object 128 and data object 130 are of different types, their identifiers (object IDs) are necessarily different. Therefore, the subject matter of claim 4 is not disclosed by Lomet.

With respect to claims 18 and 19 (which depend indirectly from claim 1), Applicant respectfully disagrees with the assessment in the Office Action that the subject matter of claims 18 and 19 are given no patentable weight because each claim recites a "list" of identifiers. Such an assertion runs afoul of well-established Federal Circuit law. *See In re Lowry*, 32 F.3d 1579, 1583-84 (Fed. Cir. 1994) (rejecting the PTO's assertion that a claim directed to content of a memory is merely printed matter not given patentable weight; the court holding that "[m]ore than mere abstraction, the data structures are specific electrical or magnetic structural elements in a memory."). Therefore, the Office Action has committed legal error in asserting that the subject matter of claims 18 and 19 carry no patentable weight. Withdrawal of the rejections of claims 18 and 19 is thus respectfully requested.

Amended independent claim 20 is also allowable over Lomet, as claim 20 now recites "in response to a data modification operation of a first row, marking the first row as a before image row containing data *of the first row* before the start of the data modification operation, and *creating a second row* as an after image containing data *of the first row* processed by the data modification operation.

In the rejection of claim 20, the Office Action referred to use of state identifiers (that are maintained in a log record to indicate a sequence of operations on a data object O). Lomet, 33:46-62. The state identifier of a data object O changes with each write operation. Thus, as contemplated in Lomet, a data object O that is written multiple times has its state identifier change (according to a log sequence number). However, a second row is *not* created as an after image, where the first and second rows are stored in the table. Therefore, withdrawal of the final rejection of claim 20 is requested.

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With respect to independent claim 28, Lomet does not disclose storing a state identifier with each row of a table, where the state identifier has a first value to indicate a first row as being a before image of a data modification operation *on a first portion* of the table, and a second value to indicate a second row as being an after image of *the* data modification operation *on the first portion* of the table, where the first and second rows are stored in the table.

Claim 29 is similarly allowable over Lomet.

All claims dependent from independent claims 20, 28, and 29 are allowable for at least the same reasons as corresponding independent claims.

With respect to dependent claim 31, which depends from claim 1, Lomet does not disclose or suggest plural storage elements to store a table and plural access module processors to enable parallel access of the plural storage elements. This was a point conceded by the Office Action. 3/1/2004 Office Action at 6. The Office Action stated that duplicating the processor and storage element of Lomet is "an obvious duplication of parts (MPEP 2144.04, Section B)." *Id.* Applicant respectfully disagrees with this assessment. There is absolutely no suggestion whatsoever of a modification of Lomet to achieve a parallel system as recited in claim 31. Parallel access of the table contained in the plural storage elements provides must greater efficiency in database system operation, something that is not suggested whatsoever by Lomet. Unless a reference is produced to suggest a modification of Lomet to achieve the subject matter of claim 31, Applicant respectfully submits that a *prima facie* case of obviousness has not been established with respect to claim 31. Withdrawal of the rejection of claim 31 is therefore requested.

In view of the foregoing, all claims are in condition for allowance, which action is respectfully requested. The Commissioner is authorized to charge any additional fees, including extension of time fees, and/or credit any overpayment to Deposit Account No. 50-1673 (9223).

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Respectfully submitted,

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